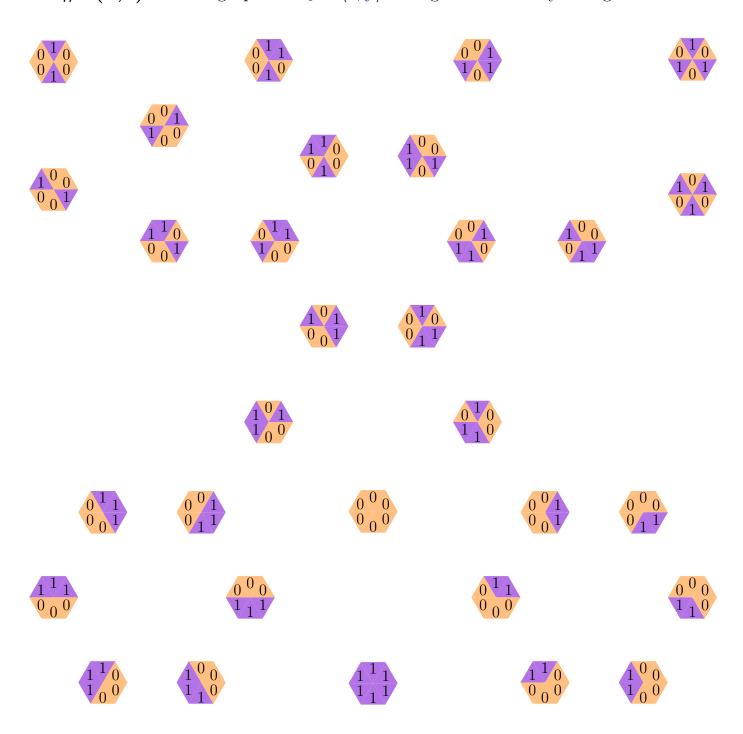
## Supplemental material: Visual Algebra (Math 4120), HW 10

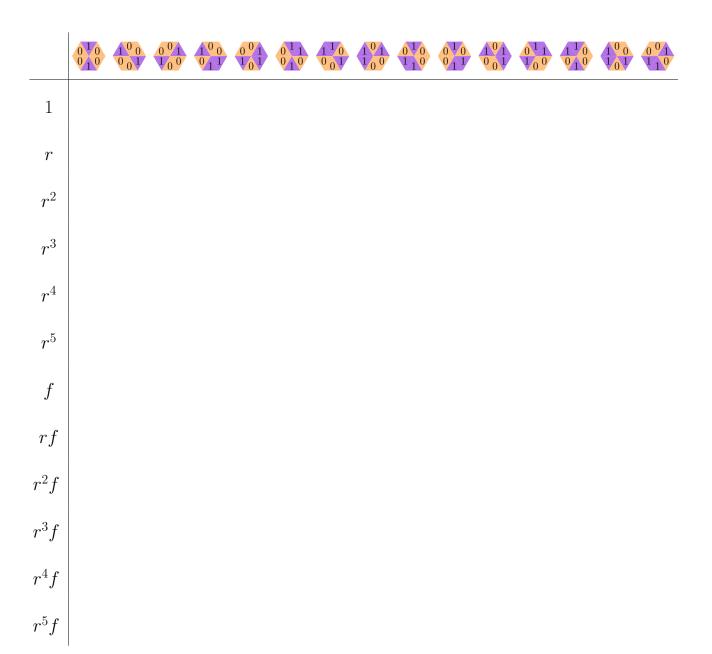
 $\#1(\mathbf{a},\mathbf{c})$ : Action graph of  $D_6 = \langle r, f \rangle$  acting on 31 "binary hexagons."



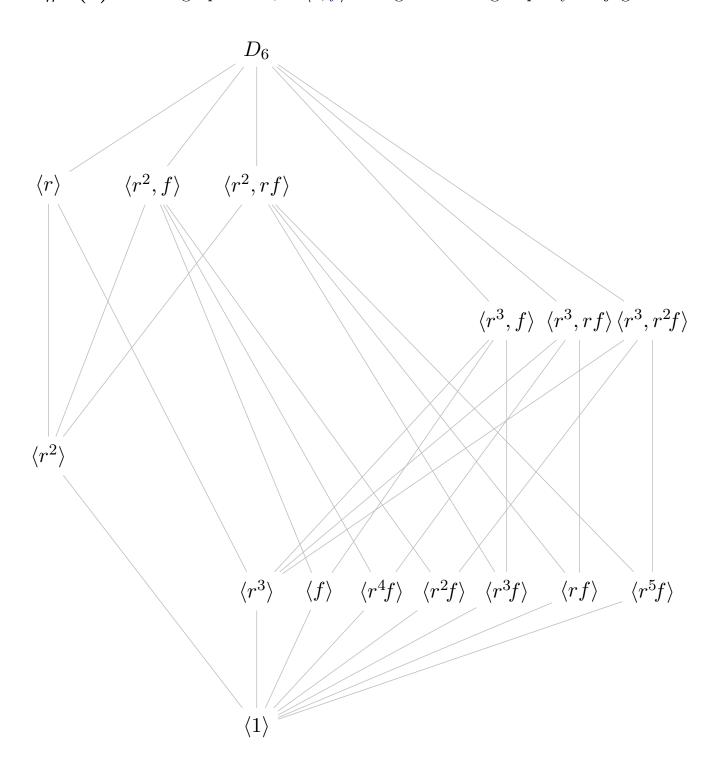
 $\#1(\mathbf{b})$ : Fixed point table of  $D_6$  acting on "binary hexagons."

	$\begin{smallmatrix}0&0&0\\0&0&0\end{smallmatrix}$	$\begin{array}{c} 1 \\ 1 \\ 1 \\ 1 \end{array}$	$\begin{smallmatrix}0&1&0\\1&0&1\end{smallmatrix}$	$\begin{array}{c} 1 & 0 & 1 \\ 0 & 1 & 0 \end{array}$	$\begin{smallmatrix}0&0&0\\1&&1\end{smallmatrix}$	$\begin{smallmatrix}0&0&1\\0&1&1\\0&1&1\end{smallmatrix}$	$\begin{smallmatrix}0&1&1\\0&1\\0&0&1\end{smallmatrix}$	$\begin{array}{c} 1 & 1 \\ 0 & 0 \end{array}$	$\begin{matrix} 1 & 1 & 0 \\ 1 & 0 & 0 \end{matrix}$	$\frac{1}{1} \frac{0}{0} 0$	$0 \ 0 \ 0 \ 1 \ 0$	$\begin{smallmatrix}0&0&0\\0&1&1\\&&1\end{smallmatrix}$	$\begin{smallmatrix}0&0&1\\0&0&1\end{smallmatrix}$	$\begin{smallmatrix}0&1&1\\0&1&0\\0&0\end{smallmatrix}$	$\begin{bmatrix} 1 & 1 & 0 \\ 0 & 0 & 0 \end{bmatrix}$	1 0 0 1 0 0
1																
r																
$r^2$																
$r^3$																
$r^4$																
$r^5$																
f																
rf																
$r^2f$																
$r^3f$																
$r^4f$																
$r^5f$																

#1(b): Fixed point table of  $D_6$  acting on "binary hexagons" (contin.)



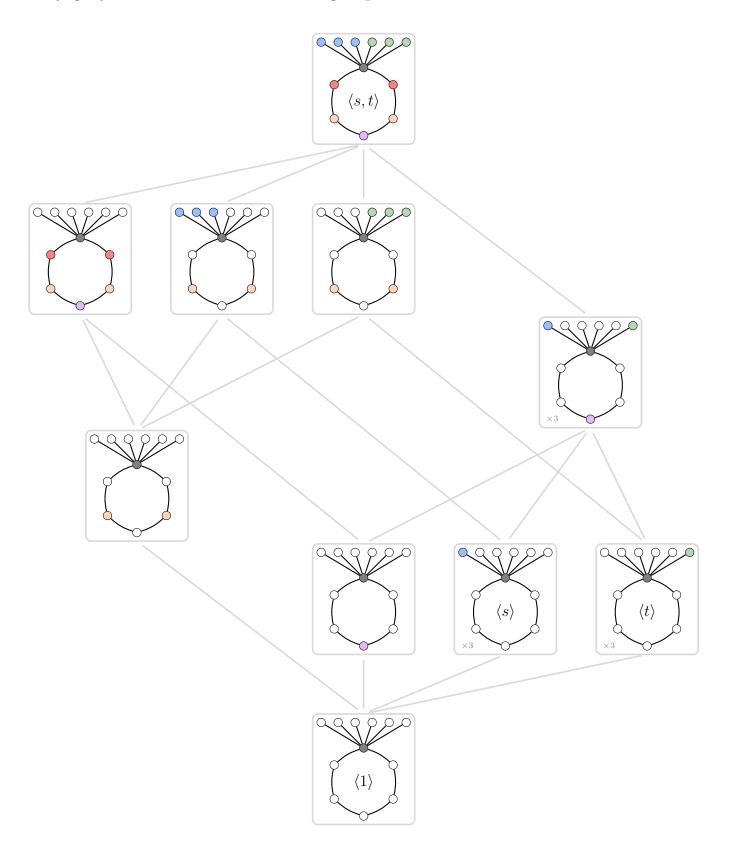
#4(a): Action graph of  $D_6 = \langle r, f \rangle$  acting on its subgroups by conjugation.



 $\#4(\mathbf{b})$ : Fixed point table of  $D_6$  acting on its subgroups by conjugation.

	$D_6$	$\langle r \rangle$	$\langle r^2, f \rangle$	$\langle r^2, rf \rangle$	$\langle r^3, f \rangle$	$\langle r^3, rf \rangle$	$\langle r^3, r^2 f \rangle$	$\langle r^2 \rangle$	$\langle r^3 \rangle$	$\langle f \rangle$	$\langle r^2 f \rangle$	$\langle r^4 f \rangle$	$\langle rf \rangle$	$\langle r^3 f \rangle$	$\langle r^5 f \rangle$
1															
r															
$r^2$															
$r^3$															
$r^4$															
$r^5$															
f															
rf															
$r^2 f$															
$r^3f$															
$r^4f$															
$r^5 f$															

#5: The subgroup diagram of  $D_6 = \langle s, t \rangle$ , where s = f and t = fr. Each conjugacy class is labeled with a subgroup that contains it.



#5: The G-set poset of  $D_6 = \langle s, t \rangle$ , where s = f and t = fr, constructed by collapsing its Cayley graph by right cosets of its subgroups.

